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A new species of *Antiporus* SHARP 1882 from peatland swamps of south-western Australia (Coleoptera: Dytiscidae)

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A b s t r a c t : *Antiporus gottwaldi* sp.n. is described from south-west Western Australia. The species appear to be restricted to acid peatland swamps. It is the smallest species of the genus and closely related to the highly endemic *A. pennifoldae* WATTS, 2000 [SW-Australia, Lake Poorginup] but differs by its smaller size, the form of the median lobe, form of metafemur and the less flanged elytra. The habitat and its remarkable water beetle coenosis are described in detail. Altogether 13 species of *Antiporus* are now reported from Australia. For the genus *Antiporus* south-west Western Australia is pointed out as a hotspot of diversity.

K e y w o r d s : Coleoptera, Dytiscidae, SW-Australia, *Antiporus*, new species, acid peatlands.

Introduction

Adult water beetles were collected during a four-week faunal survey of the south-western part of Western Australia in December 1999 and January 2000 by the author and Stephan Gottwald. Many parts of the area has not been well investigated previously for water beetles, therefore the study provided a number of new regional records as well as new species (BALKE et al. 2000, HENDRICH 2000, 2001).

Members of the genus *Antiporus* SHARP 1882 [tribe Hydroporini ERICHSON] are distributed in still, or relatively still, water in southern Australia, along the east coast of the continent and New Zealand (WATTS 1978). In a recent revision of the genus, WATTS (1997) described two additional species from the south-west of Western Australia, *A. pembertoni* WATTS and *A. hollingsworthi* WATTS. Furthermore two rare new species (*A. mcrae* and *A. pennifoldae*) of the genus, restricted to *Melaleuca* peat swamps, have been described recently from that region (WATTS & PINDER 2000). These were among material collected in an entomological survey of wetlands in the wheatbelt and adjacent areas by the Department of Conservation and Land Management (CALM).

The author report on and describe, an additional species which will probably prove to be restricted to an area that is called "the southern acid peat flats of south-western Australia" (PUSEY & EDWARD 1990). Together with the new species described herein, thirteen species of *Antiporus* are now known from Australia.

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The Study Area

The study area (Fig. 1) is located in the mesic far south-west corner of Western Australia. The climate is temperate. Summers are warm and dry, winters cold and wet. Rainfall is least inland (where the median annual value is about 250 mm) and greatest and most reliable near the coast (1400 mm). "Symphyomyrtus" winter-rain sclerophylous forest is the major vegetation in the region. Coastal fringes and exposed sandy patches of the Darling Escarpement region carry species-rich shrubland, summer-dry freshwater swamps and *Banksia*-"Corymbia"-"Monocalyptus" woodland. The moist south-west corner of Western Australia is of outstanding interest from the viewpoint of both phytogeography (HOPPER 1979, NELSON 1981) and zoogeography (KIKKAWA et al. 1979, WILLIAMS & ALLEN 1987). With respect to the freshwater fauna, there is a high degree of endemism in Western Australia, and a high proportion of these endemics occur in, or are restricted to, the far south-west of that State (PUSEY & EDWARD 1990, BAYLY 1992).

Material and Methods

Specimens mentioned in this work are deposited in several collections which are abbreviated in the text as follows:

CH ..... Collection Lars Hendrich, Berlin, Germany
OLML ..... Oberösterreichisches Landesmuseum, Linz, Austria
SAMA ..... South Australian Museum, Adelaide, South Australia, Australia
WAM ..... Western Australian Museum, Perth, Western Australia, Australia

The habitus drawing was produced by the Latvian artist Dmitry Paramonov (Riga). The median lobes were traced from SEMs. The style of the descriptive notes follows WATTS (1997) and WATTS & PINDER (2000).

Taxonomy

The following species of the genus *Antiporus* are described from Australia:

A. bakewelli (CLARK 1862) ..... VIC, NSW, QLD, NT
A. blakei (CLARK 1862) ..... SA, VIC, TAS, NSW
A. femoralis (BOHEMAN 1858) ..... SA, VIC, TAS, ACT, NSW
A. gilberti (CLARK 1862) ..... WA, SA, VIC, TAS, NSW, QLD
A. gottwaldi sp.n. ..... WA (SW-Australia only)
A. hollingsworthi WATTS 1997 ..... WA (SW-Australia only)
A. interrogationis (CLARK 1862) ..... SA, VIC, NSW, ACT
A. jenniferae WATTS 1997 ..... QLD
A. pembertoni WATTS 1997 ..... WA (SW-Australia only)
A. pennifoldae WATTS & PINDER 2000 ..... WA (SW-Australia only)
A. mcrae WATTS & PINDER 2000 ..... WA (SW-Australia only)
A. simplex WATTS 1978 ..... SA, NSW, QLD
A. willyamsi WATTS 1997 ..... SA, VIC
A. wilsoni WATTS 1978 ..... NSW, QLD

Abbreviations: ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD = Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia.

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***Antiporus gottwaldi* sp.n.**

H o l o t y p e : ♂ : "AUSTRALIA / WA: D'Entrecasteaux N.P., 20 km S Northcliffe, Windy Harbour Road [34°46'S 116°04'E], 50 m, 3.1.2000, Hendrich leg. (loc.WA 10b/156). " (WAM).

P a r a t y p e s : 8 females and 6 males; same data as holotype (CH, OLML, SAMA, WAM); 1 female: "SW-Australia/ 5 km S Northcliffe [34°38'S 116°06'E], 10 m, 27.11.1996, Hendrich leg./ Lok. 37" (CH).

E t y m o l o g y : Named after the musician and "Bups" specialist Stephan Gottwald (Berlin, Germany) who collected part of the type material.

D e s c r i p t i o n : Measurements (N = 15). Total length of beetle 3.00 – 3.35 mm (holotype 3.2 mm); length without head 2.75 – 2.95 mm (holotype 2.8 mm); greatest width of beetle 1.70 – 1.85 mm (holotype 1.75 mm).

D i a g n o s i s : Elongate-oval, reddish-brown, appendages lighter (Fig. 2). The smallest species of the genus.

C o l o u r : Upper side comparably light; head reddish; pronotum ferrugineous anteriorly and laterally, dark posteriorly and medially; elytron dark brown, paler laterally (Fig. 2). Venter yellowish to brownish; pronotum, epipleuron, legs and abdominal sternites yellowish to ferrugineous; metasternum, metacoxal plate and process brownish. Antennal segments yellowish and darkened anteriorly.

S c u l p t u r e : Dorsal surface, punctures dense, moderately sized; those on head weaker and sparser, a little smaller than eye facet. Pronotum and elytron with narrow but well marked lateral beading. Microreticulation on head and pronotum fine, moderately impressed, on elytron very fine and almost unvisible. Ventral surface, punctures very dense, microreticulation similar to that on elytron. Prosternal process blunt, sides weakly bowed, moderately ridged. Metacoxal lines parallel in apical quarter, weakly diverging to about 1.4 times narrowest width, area between them flat, not depressed.

M a l e : Protarsi moderately expanded, single proclaw relatively stout, bent at right angles evenly curved with ventral basal spine (Fig. 3). Mesotibia normal, mesotarsi similar to protarsi except that the second and third segment are a little shorter and two claws are present. Metafemur a little stouter than in female, with well marked beading in middle at hind margin (Fig. 8). Apical third of elytron not flanged. Central lobe of aedeagus with asymmetric tip (Figs 9-10).

F e m a l e : Protarsi weakly expanded, two claws. Mesotarsi moderately expanded, more so than protarsi. Metatibia simple. Elytron only weakly flanged (Fig. 5).

A f f i n i t i e s : The average size, relatively uniform reddish-brown colour and essentially simple metafemora suggest that the species is very near to *A. pennifoldae* [length 3.3 – 3.4 mm]. The female of *A. gottwaldi* is instantly recognisable by the less flanged elytra [strongly flanged in *A. pennifoldae* (Fig. 6)]. The distinctly asymmetric central lobe of the aedeagus is a character shared with *Antiporus pennifoldae* (Figs 11-12) from which it can easily be distinguished by the form of the male proclaws (Fig 3-4) and the absence of a small triangular spine (Fig. 7-8) on the hind edge in the middle of the otherwise simple metafemur.

D i s t r i b u t i o n : SW-Australia. Known only from the peatlands south of Northcliffe.

H a b i t a t : Most specimens were obtained from shallow and half-shaded pools in a *Melaleuca* blackwater swamp (loc. 10b), with few clumps of *Juncus* spp. and extensive

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beds of macrophytes; depth up to 20 cm; bottom consisted of sedge-filled peat (pH 5.5), twigs and rotten leaves (Fig. 13). A single female was collected in a peat swamp surrounded by *Melaleuca* trees (loc. 37), with dark humic and sligthly acidic water (pH 6.0). The whole area is seasonally flooded with a permanent central water body of 200 sqm in summer. The vegetation was dominated by large stands of *Juncus* L. and dense beds of macrophytes dominated by *Triglochin* L. and *Callitriche* L.; depth up to 40 cm; bottom consisted of sedge-filled peat, twigs and rotten leaves (Fig. 14).

Apart from the *Antiporus*, the water beetle coenosis included the following species: Loc. 10b: Dytiscidae: *Uvarus pictipes* (LEA), *Liodessus inornatus* (SHARP), *Antiporus hollingsworthi* WATTS, *A. mcrae* WATTS & PINDER, *Sternopriscus minimus* LEA, *Copelatus ater* SHARP; Hydrophilidae: *Enochrus eyrensis* (BLACKBURN), *Limnoxenus zealandicus* (BROUN), *Paracymus pygmaeus* (MACLEAY). Dytiscidae: Loc. 37: *Antiporus femoralis* (BOHEMAN), *Liodessus inornatus* SHARP, *Sternopriscus browni* SHARP, *Sternopriscus minimus* LEA, *Megaporus solidus* (SHARP), *Platynectes aenescens* (SHARP), *Rhantus simulans* RÉGIMBART, *Rhantus suturalis* (MACLEAY), *Spencerhydrus pulchellus* SHARP; Hydrophilidae: *Enochrus eyrensis* (BLACK-BURN), *Limnoxenus zealandicus* (BROUN), *Paracymus pygmaeus* (MACLEAY).

Discussion

Thirteen species of Dytiscidae and three species of Hydrophilidae were recorded from two separated acid [pH 5.5 – 6.0] peatland ponds located between Northcliffe and Windy Harbour, Western Australia in summer 1996 and 2000. All Dytiscidae except *Antiporus femoralis* and *Rhantus suturalis* are endemic species of Southwestern Australia, whereas the three Hydrophilidae are widely distributed over the southern parts of the continent and Tasmania.

Together with *Antiporus mcrae*, *A. pembertoni* and *A. pennifoldae*, the new *Antiporus* described herein, is the fourth species of the genus which seems to be restricted to acid peatland swamps of that region. The fifth endemic species, *A. hollingsworthi*, is more widespread in the south-west and reported from different peaty lakes and permanent swamps south of a line from Perth to Albany. For the genus *Antiporus* south-west Western Australia is pointed out as a hotspot of diversity.

The recently described *Antiporus mcrae* which was only known from the holotype (WATTS & PINDER 2000), is recorded for the second time. The other interesting beetles in the Northcliffe area are *Sternopriscus minimus*, the smallest species of the genus, which was the most dominant dytiscid at locality 10b (more than 300 specimens) and *Rhantus simulans*, a large species (13.5-14.5 mm), extremely rarely collected, and of which only a few historical specimens were known before. This rarity is reflected by the fact that *Rhantus simulans* was omitted from the *Guide to Wetland Invertebrates of Southwestern Australia* (DAVIS & CHRISTIDIS 1997) [See BALKE et al. 2000].

Both taxa and the *Antiporus* mentioned above are acidophilic species with limited ranges and are now thought to be endangered by peatland swamp drainage and dramatic increases in salinity (DAVIS & CHRISTIDIS 1997, CLEWS 1999).

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Zusammenfassung

In der vorliegenden Arbeit wird die bisher kleinste Art der in Australien und Neuseeland beheimateten Schwimmkäfergattung *Antiporus* beschrieben. *Antiporus gottwaldi* lebt in küstennahen, sauren Seggensümpfen Südwestaustraliens und steht dem ebenfalls aus dieser Region beschriebenen *A. pennifoldae* sehr nahe. Der Lebensraum der neuen Art sowie die dort nachgewiesenen Gemeinschaften aquatischer Käfer werden beschrieben. Insgesamt sind jetzt 13 Arten der Gattung aus Australien gemeldet. Fünf Arten besiedeln ausschließlich den Südwesten des Kontinents und sind zum Teil nur vom locus typicus bekannt. Acht Arten sind entlang der Süd- und Ostküste verbreitet und zum Teil auch von Tasmanien gemeldet. Die hydroentomologisch bemerkenswerten Niedermoorgebiete Südwestaustraliens sind damit ein Diversitätszentrum der Gattung *Antiporus* auf dem australischen Kontinent.

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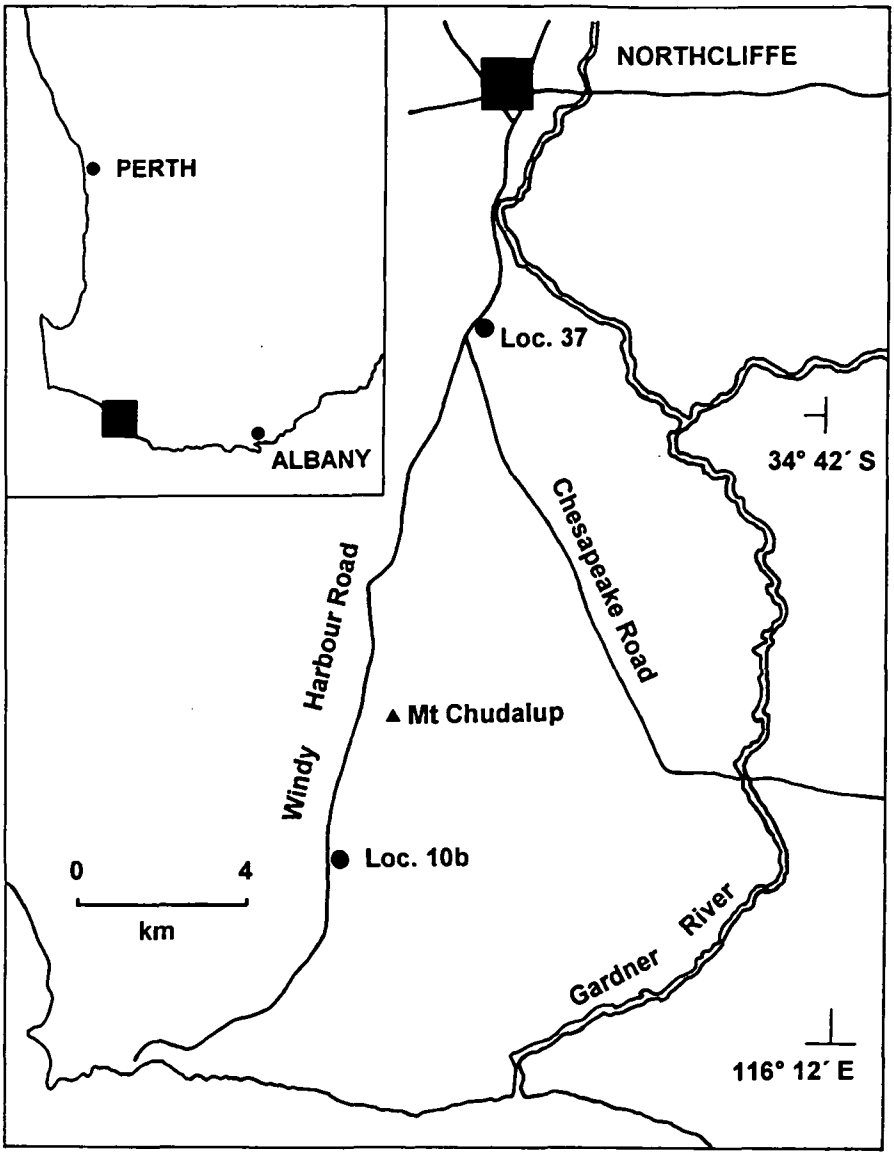

Fig. 1: Map showing the study area in south-west Western Australia and the location of the type localities (Modified after BAYLY 1992).

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Abb. 2: Habitus and coloration of *Antiporus gottwaldi* sp.n. (female, 3.2 mm).

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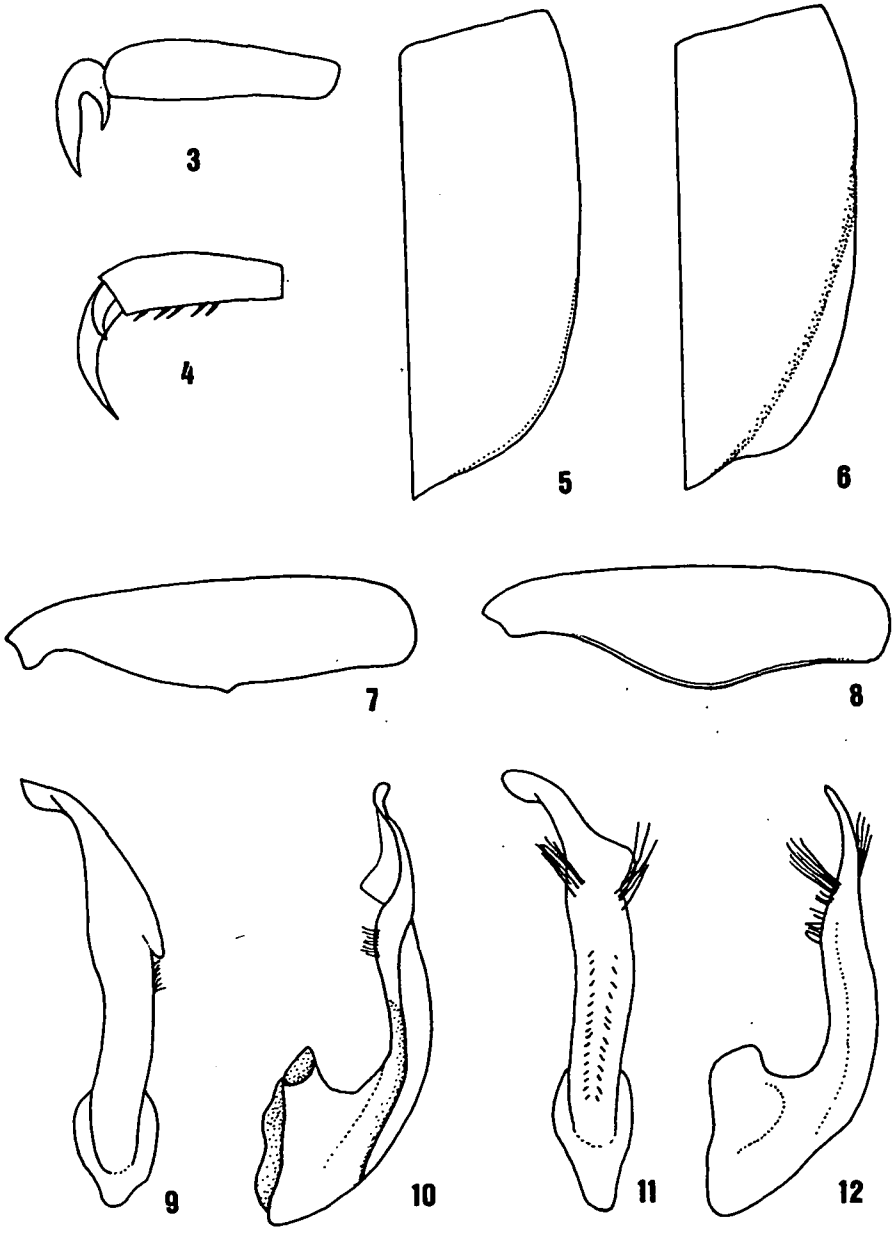

Figs. 3-12: **3** – lateral view of proclaw and apical tarsal segment of *A. gottwaldi* sp.n.; **4** – ditto *A. pennifoldae*; **5** – dorsal view of elytron of *Antiporus gottwaldi* sp.n. female; **6** – ditto *A. pennifoldae*; **7** – ventral view of metafemur of *A. pennifoldae*; **8** – ditto *A. gottwaldi* sp.n.; **9** – Dorsal view of median lobe of aedeagus of *A. gottwaldi* sp.n.; **10** – ditto of lateral view; **11** – Dorsal view of median lobe of aedeagus of *A. pennifoldae*; **12** – ditto of lateral view.

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Figs. 13-14: **13** – Loc. 10b, peatland swamp, 20 km south of Northcliffe/ Windy Harbour Road; **14** – Loc. 37, pond, 5 km south of Northcliffe/ Windy Harbour Road.

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